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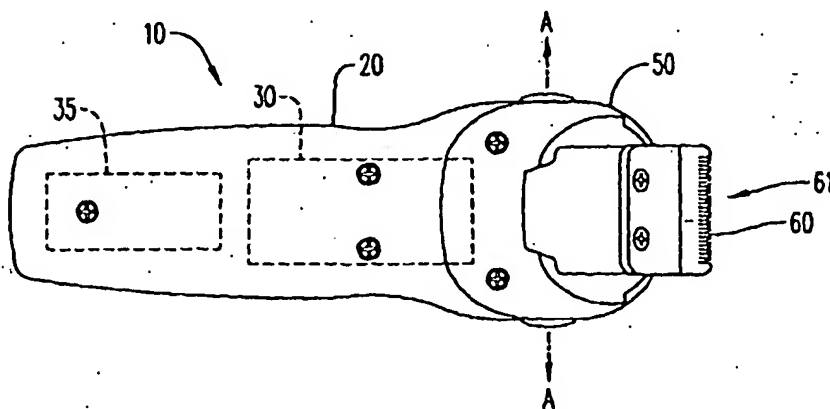
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(54) Title: HAIR CLIPPER WITH PIVOTING CLIPPER HEAD ASSEMBLY



(57) Abstract: A hair clipper (10) having a pivoting clipper head (50) is provided. The hair clipper has a clipper head (50), a handle (20) and connectors (42) for connecting the handle and the head. The clipper head includes a stationary blade (55) having teeth and a reciprocating blade (57) having teeth, wherein the teeth of the stationary blade are substantially parallel to the teeth of the reciprocating blade forming a cutting edge (61). The handle includes longitudinal axis and a motor (30) for reciprocating the blades such that hair positioned within the teeth of the stationary blade are cut by the teeth of the reciprocating blade. The connectors the clipper head and the handle such that the clipper head pivots about an axis of rotation (A-A) that is perpendicular to the longitudinal axis of the handle and parallel to the cutting edge.

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HAIR CLIPPER WITH PIVOTING CLIPPER HEAD ASSEMBLY**BACKGROUND OF THE INVENTION**5 1. Field of the Invention

The present invention relates to hair clippers. More particularly the present invention relates to a hair clipper having a pivoting clipper head assembly.

10 2. Description of the Prior Art

Electric hair clippers having a stationary blade and a reciprocating blade are known in the art. The stationary blade and the reciprocating blade each have a plurality of teeth along the leading edge of the blades. The blades are mounted to the clipper such that the teeth of the stationary
15 blade are substantially parallel to the teeth of the reciprocating blade. In this manner, reciprocating the reciprocating blade with respect to the stationary blade trims hair positioned between the teeth.

Since the leading edge of the blades present the teeth to the cutting surface, the person using the clipper must move the clipper to various
20 angles to position the leading edge of the blades parallel with respect to the cutting surface. Thus, it is desirable to provide a hair trimmer that permits adjustment of the blades with respect to the handle to better enable the user to position the blades parallel with respect to the cutting surface.

25 **SUMMARY OF THE INVENTION**

It is an object of the present invention to provide a clipper having a clipper head assembly that is pivotable about an axis of rotation that is perpendicular to the handle and parallel to the cutting edge of the clipper head.

30 The present invention is an improved hair clipper having a pivoting clipper head assembly. The hair clipper includes a clipper head including a stationary blade having teeth and a reciprocating blade having teeth in which the teeth of the stationary blade are substantially parallel to the teeth

of the reciprocating blade forming a cutting edge. The clipper also includes a handle having a longitudinal axis and means for reciprocating the reciprocating blade such that hair positioned within the teeth of the stationary blade are cut by the teeth of the reciprocating blade. Connectors connect the clipper head and the handle such that the clipper head pivots about an axis of rotation that is perpendicular to the longitudinal axis of the handle and parallel to the cutting edge.

In one embodiment, the improved hair clipper has a handle with a pair of legs. Each leg has a connector disposed thereon. The clipper head has pivot points positioned on opposite sides of the head. The connectors are adapted to pivotally secure the pivot points such that the clipper head is pivotable about an axis of rotation that is perpendicular to the longitudinal axis of the handle and parallel to the cutting edge of the clipper head.

DESCRIPTION OF THE FIGURES

Fig. 1 is a top view of the clipper of the present invention;

Fig. 2 is a bottom view of the clipper of Fig. 1;

Fig. 3 is an exploded bottom view of a preferred embodiment of the clipper of Fig. 1;

Fig. 4 is a first side view of an alternative embodiment of the clipper of the present invention showing the clipper head in its first position;

Fig. 5 is the first side view of the clipper of Fig. 4 showing the clipper head in its second position;

Fig. 6 is the first side view of the clipper of Fig. 4 showing the clipper head in its third position;

Fig. 7 is the first side view of the clipper of Fig. 4 showing the clipper head in its fourth position; and

Fig. 8 is the first side view of the clipper of Fig. 4 showing the clipper head in its fifth position.

DETAIL DESCRIPTION OF THE INVENTION

Referring to the figures and particularly to Fig. 1, a clipper, generally represented by reference numeral 10, is shown. Clipper 10 has a handle portion 20 and a clipper head assembly 50.

5 In a first embodiment of clipper 10, shown in Fig. 1., the clipper is a rechargeable clipper. In this embodiment, handle 20 houses a motor 30 and a battery 35.

Shown in Fig. 2, handle 20 includes an on-off switch 22, a plug 24, and a recharging indicator 26. Switch 22 has an on position and an off
10 position. Motor 30 is operatively coupled to battery 35 when switch 22 is in the on position. Battery 35 is operatively coupled to plug 24 and recharging indicator 26 when switch 22 is in the off position. In operation, when switch 22 is placed in the on position, power flows from battery 35 to motor 30. Further, when switch 22 is in the off position, battery 35 is operatively
15 coupled to plug 24 and recharging indicator 26 such that the plug 24 when coupled to a standard household electrical outlet delivers power to recharge the battery and to operate recharging indicator 26. Indicator 26 has a first state when battery 35 is recharging and a second state when the battery is fully recharged.

20 In this embodiment shown in Fig. 2, indicator 26 is a light emitting diode or LED 27. LED 27 has a first on or illuminated state and a second off state. In use, LED 27 is illuminated when battery 35 is recharging and the LED is off when the battery is fully recharged.

In an alternative embodiment of clipper 10 (not shown), the clipper is
25 not rechargeable. In this alternative embodiment, handle 20 houses motor 30 operatively coupled to plug 24 when switch 22 is in the on position. In operation, switch 22 is placed in the on position to cause power to flow to motor 30 from a standard household electrical outlet coupled to a power cord, not shown, which is coupled to plug 24.

30 Referring again to Fig. 2, clipper head 50, similar to prior art clippers, includes stationary blade 55 and reciprocating blade 57. Blade 55 and blade 57 each have a plurality of teeth 60 along the leading edge of the blades. Blade 55 and blade 57 are mounted to head 50 such that teeth 60

of blade 55 are substantially parallel to teeth 60 of blade 57 forming a cutting edge 61. Motor 30 is operative coupled to reciprocating blade 57 to reciprocate blade 57 back and forth perpendicular to the longitudinal axis of handle 20. Thus, hair placed within teeth 60 is trimmed as blade 57 reciprocates with respect to blade 55.

Head 50 is mounted to handle 20 so as to permit the head to pivot about an axis or rotation A. Axis of rotation A is perpendicular to the longitudinal axis of the handle and is parallel to the cutting edge 61. Preferably, axis A is offset from cutting edge 61 in the direction of handle 20. Head 50 is mounted to handle 20 so as to permit motor 30 to reciprocate blade 57 as the head pivots about axis of rotation A. Thus, clipper 10 enables the user to easily position cutting edge 61 parallel to the cutting surface.

In the preferred embodiment shown in Fig. 3, handle 20 defines a pair of support legs 40. Preferably, handle 20 is forked. Each leg 40 has a connector 42 positioned along axis or rotation A. Head 50 has a pivot point 59 positioned on opposite sides of the head also positioned along axis of rotation A. Connectors 42 are adapted to secure pivotally pivot points 59 of head 50 to handle 20. Thus, connectors 42 and pivot points 59 are adapted to enable clipper head 50 to pivot about axis of rotation A.

In an alternate embodiment, shown in Figs. 4 through 8, connectors 42 and pivot points 59 are adapted to secure head 50 within handle 20 in one of a plurality of preset pivoted positions 70-1, 70-2, 70-3, 70-4 and 70-5, respectively. In this embodiment, each connector 42 includes a first gear 44 and a release button 46 and each pivot point 59 includes a second gear 64. First gears 44 are connected to legs 40 so as to mesh with second gears 64 connected to head 50. Release buttons 46 are adapted to extend first gears 44 into meshing relationship with second gears 64 and are adapted to retract the first gears from the meshing relationship with the second gears. Release buttons 46 are adapted to normally mesh first gears 44 with second gears 64, thus securing head 50 in one of the preset plurality of pivoted positions. Depressing release buttons 46 unmeshes first gears 44 from second gears 64. With release buttons 46 depressed

and first gear 64 is unmeshed from second gears 64, 65 is pivotable about axis of rotation A to another one of the preset plurality of pivoted positions.

- It should be understood that the foregoing description is only
- 5 illustrative of the present invention. Various alternatives and modifications can be devised by those skilled in the art without departing from the invention. Accordingly, the present invention is intended to embrace all such alternatives, modifications and variances which fall within the scope of the appended claims.

WHAT IS CLAIMED IS.

1. An improved hair clipper comprising:
 - a clipper head including a stationary blade having teeth and a
 - 5 reciprocating blade having teeth, wherein the teeth of the stationary blade are substantially parallel to the teeth of the reciprocating blade forming a cutting edge;
 - a handle having a longitudinal axis and means for reciprocating the reciprocating blade such that hair positioned within the teeth of the
 - 10 stationary blade are cut by the teeth of the reciprocating blade; and
 - means for connecting the clipper head and the handle such that the clipper head pivots about an axis of rotation that is perpendicular to the longitudinal axis of the handle and parallel to the cutting edge.
- 15 2. The hair clipper of claim 1, wherein the connecting means comprises:
 - at least one leg disposed on the handle and offset from the longitudinal axis of the handle;
 - a first connector disposed on the at least one leg; and
 - 20 a second connector positioned on the clipper head,
 - wherein the first and second connectors join the clipper head to the leg of the handle such that the clipper head pivots about the axis of rotation.
- 25 3. The hair clipper of claim 1, wherein the connecting means is adapted to join the clipper head and the handle such that the clipper head is securable in any one of a plurality of preset pivoted positions.
4. The hair clipper of claim 3, wherein the connecting means
- 30 comprises:
 - at least one leg disposed on the handle and offset from the longitudinal axis of the handle;
 - a first connector disposed on the at least one leg; and

a second connector positioned on the clipper head,

wherein the first and second connectors join the clipper head to the leg of the handle such that the clipper head pivots about the axis of rotation and such that the clipper head is securable in any one of the plurality of pivoted positions.

5 5. The hair clipper of claim 4, wherein the first connector is a first gear, the second connector is a second gear, and the connecting means includes means for meshing and unmeshing the first gear and the
10 second gear, such that when the first gear is meshed with the second gear the clipper head is secured in any one of the plurality of pivoted positions, and when the first gear is unmeshed from the second gear the clipper head is pivotable about the axis of rotation.

15 6. The hair clipper of claim 5, wherein the means for meshing and unmeshing comprises a release button adapted to mesh the first gear with the second gear and adapted to be depressed to unmesh the first gear from the second gear.

20 7. The hair clipper of claim 1, wherein the reciprocating means comprises a motor.

 8. The hair clipper of claim 7, wherein the handle further comprises:
25 a switch having an on position and an off position, and
 a cord with a plug,
 wherein the motor is operatively coupled to the cord when the switch is in the on position such that power flows to the motor from a standard household electrical outlet that receives the plug.

30 9. The hair clipper of claim 7, further comprising a rechargeable battery operatively coupled to the motor.

10. The hair clipper of claim 9, wherein the handle further comprises:

a switch having an on position and an off position, and
a plug,

5 wherein the motor is operatively coupled to the battery when the switch is in the on position such that power flows from the battery to the motor..

11. The hair clipper of claim 10, wherein the handle further
10 comprises:

a recharging indicator and wherein the battery is operatively coupled to the plug and the recharging indicator such that when the switch is in the off position power flows from a standard household electrical outlet that receives the plug to deliver power to recharge the battery and to operate
15 the recharging indicator.

12. The hair clipper of claim 11, wherein the recharging indicator has a first state indicative of the battery recharging and a second state indicative of the battery fully recharged.

20 13. The hair clipper of claim 11, wherein the recharging indicator comprises an LED, said LED is illuminated when the battery is recharging and is not illuminated when the battery is fully recharged.

25 14. A hair clipper comprising:

a clipper head including pivot points positioned on opposite sides of the head, a stationary blade having teeth and a reciprocating blade having teeth, wherein the teeth of the stationary blade are substantially parallel to the teeth of the reciprocating blade forming a cutting edge; and

30 a handle having a longitudinal axis, a pair of legs, a connector disposed on each leg, and means for reciprocating the reciprocating blade such that hair positioned within the teeth of the stationary blade are cut by the teeth of the reciprocating blade,

wherein each connector is adapted to engage one of the pivot points such that the clipper head is pivotable about an axis of rotation perpendicular to the longitudinal axis of the handle and parallel to the cutting edge.

5

15. The hair clipper of claim 14, wherein the connectors and the pivot points are adapted to join the clipper head and the handle such that the clipper head is securable in any one of a plurality of preset pivoted positions.

10

16. The hair clipper of claim 15, further comprising a means for selectively releasing and securing the connectors and the pivot points such that when the connectors and pivot points are secured the clipper head is secured in any one of the plurality of pivoted positions, and when the
15 connectors and pivot points are released the clipper head is pivotable about the axis of rotation.

15

17. The hair clipper of claim 16, wherein the connectors are first gears, the pivot points are second gears, and the releasing and securing means is adapted to release and secure the first gears with the second
20 gears, respectively, such that when the first gears are secured with the second gears the clipper head is secured in any one of the plurality of pivoted positions, and when the first gears are released from the second gears the clipper head is pivotable about the axis of rotation.

20

25

18. The hair clipper of claim 16, wherein the releasing and securing means comprises a release button adapted to normally secure the connectors and the pivot points, and adapted to be depressed to release the connectors and the pivot points.

30

19. An electric hair clipper comprising:
a clipper head including a stationary blade having teeth and a reciprocating blade having teeth, wherein the teeth of the stationary blade

are substantially parallel to the teeth of the reciprocating blade forming a cutting edge;

a handle having a longitudinal axis, a motor for reciprocating the reciprocating blade such that hair positioned within cutting edge are cut;

5 and

means for joining disposed on the clipper head and the handle for joining the clipper head to the handle such that the clipper head pivots about an axis of rotation that is perpendicular to the longitudinal axis of the handle, parallel to the cutting edge and offset from the cutting edge towards
10 the handle.

20. The electric hair clipper of claim 19, wherein the means for joining is further adapted to join the clipper head and the handle such that the clipper head is securable in any one of a plurality of preset pivoted
15 positions.

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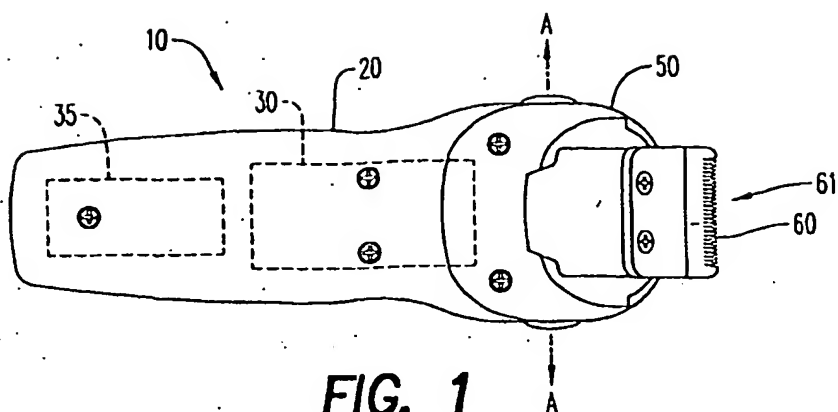


FIG. 1

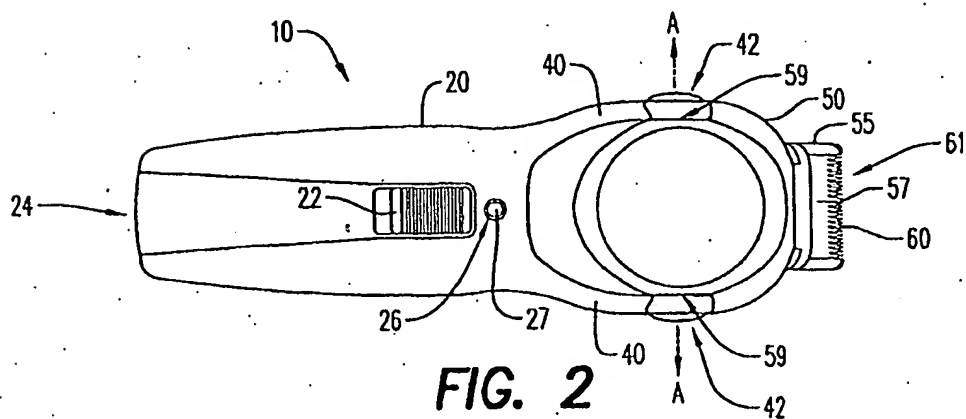


FIG. 2

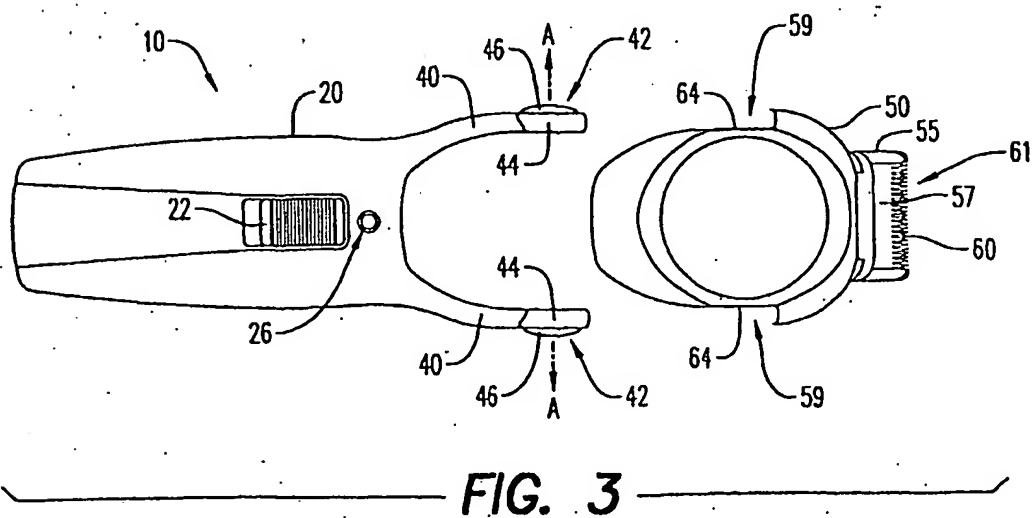
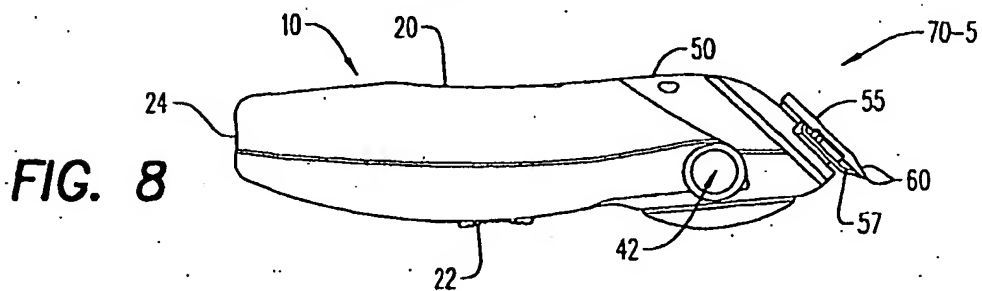
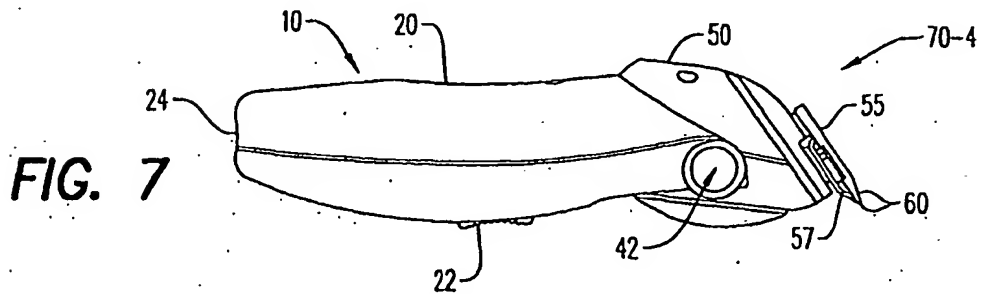
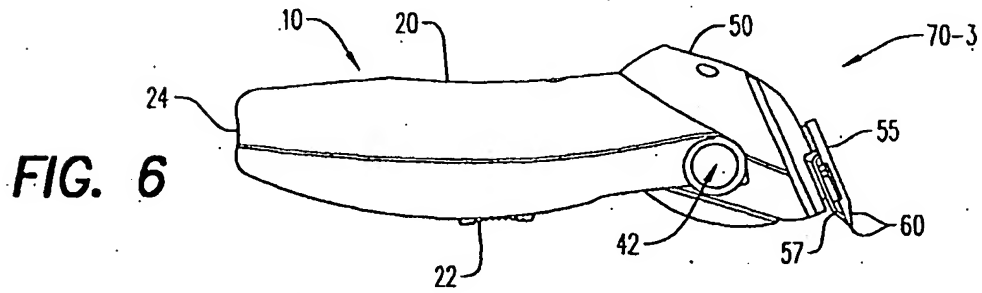
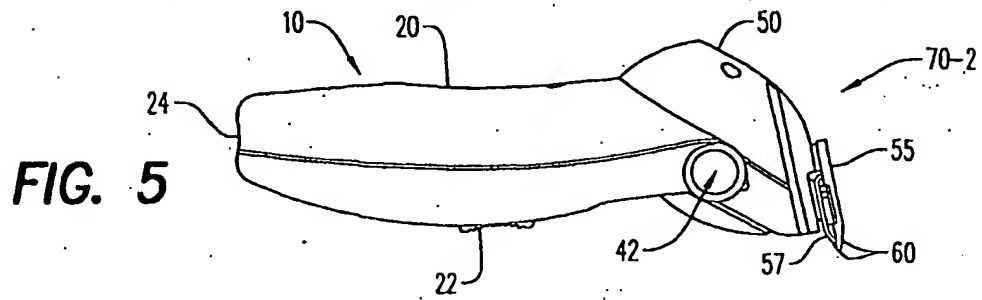
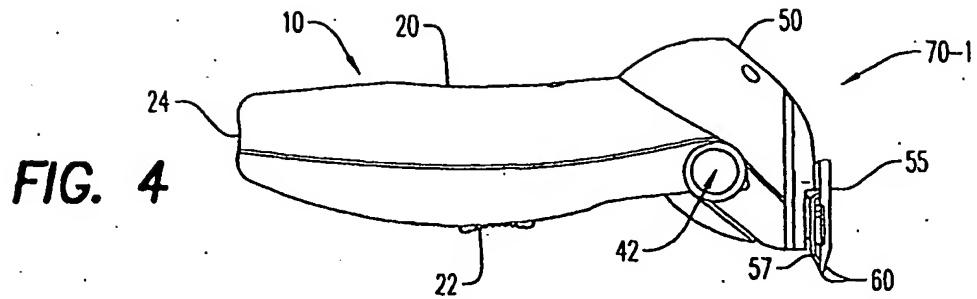


FIG. 3

SUBSTITUTE SHEET (RULE 26)



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/30063

A. CLASSIFICATION OF SUBJECT MATTER		
IPC(7) : B26B 19/06; B26B 19/04; B26B 19/38 US CL : 30/43.92 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) U.S. : 30/30, 31, 41.7, 41.9, 43, 43.1, 43.3, 43.91, 51, 57, 527, 528, 531, 532, 533, 534, 195, 196, 199, 208, 210, 341, DIG 1		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y, P	US 6,112,414 A (ANDIS et al) 05 September 2000 (05.09.2000), column 6, lines 39-50, see abstract and drawings.	9-13
Y, P	US 6,082,005 A (TEZUKA) 04 July 2000 (04..07.2000), column 11, lines 29-55, see abstract.	5-6 and 17-18
X — Y	US 5,165,172 A (WEINRAUCH) 24 November 1992 (24.11.1992), column 1, lines 45-60, see abstract.	1-4, 7-8, 14-16 and 19-20 5-6, 9-13 and 17-18
X — Y	US RE 22,638 A (KLEINMAN) 24 April 1945 (24.04.1945), columns 2-4, lines 20-40, 1-50 and 1-10.	1-4, 7-8, 14-16 and 19-20 5-6, 9-13 and 17-18
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 28 December 2000 (28.12.2000)		Date of mailing of the international search report JAN 2001
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230		Authorized officer Rinaldi I. Rada Telephone No. 703-308-1148 Sheila Vechey Patent Legal Specialist Technology Center 3700

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